

Extraction and Refining

USSR

UDC:669.35.046.54/55

YAKOVLEVA, N. G., PANCHENKO, I. G. and OSINTSEV, V. G.

"Refining of Oxygen-Free Copper"

Moscow, Tsvetnyye Metally, No 2, Feb 74, pp 56-58

Abstract: The most difficult task in the refining of oxygen-free copper is the elimination of endogenic nonmetallic inclusions in the form of tiny gas pores located around the periphery of the cross section of the ingot at a depth of 5-35 mm. The use of the method of pouring through a mixer allows the reject rate due to ingot porosity to be reduced while increasing the productivity of the installation.

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OSINTSEVA, N.A.

SO:JPRS 55015  
25 JAN 1972

UDC: 614.4(-22):65

DEVELOPMENT OF AN AUTOMATED SYSTEM OF MANAGEMENT OF URBAN EPIDEMIOLOGICAL SERVICE

[Article by V.V. Benenson, B.N. Tsinker, V.I. Slutskiy, N.A. Osintseva, Novokuznetsk Municipal Health Department (headed by V.V. Benenson) and Chair of Social Hygiene and Public Health Organization (headed by B.N. Tsinker), candidate of medical sciences), Novokuznetsk Institute for the Advanced Training of Physicians (vice-chancellor: Professor G.L. Starkov); Moscow, Sovetskoye Zdravookhraneniye, Russia, No 12, 1971, submitted 4 May 1971, pp 42-45]

Epidemic control work and, in particular, control of intestinal infections occupies a special place in the public health system. For prompt and complete detection and decimation of the sources of infection, establishment and neutralization of means of transmission of the pathogen, public health organizers must concentrate maximum attention on development of new and more effective methods in medical service work.

In 1969, the Novokuznetsk Municipal Health Department determined to optimize the information system with respect to incidence of intestinal infections. Under the supervision of V.I. Slutskiy, candidate of medical science and senior instructor at the Novokuznetsk Institute for the Advanced Training of Physicians, new approaches have been developed for investigation of the epidemic process and organization of supply of information at different levels of management. Prototypes of epidemiological examination cards have been created which permit gathering fuller and more objective information. A change in the method of gathering information involving mandatory interview with the patient himself while in the hospital by a specially assigned assistant to the epidemiologist, made it possible to obtain important information pertaining to the probable circumstances involved in the infection.

The results of sanitary-bacteriological examination of environmental objects are recorded in a formal document. This document facilitates quantitative evaluation of the degree of contamination which is of great interest for correlation analysis.

All information pertaining to intestinal infections is concentrated in a specially created service, the laboratory of epidemiological analysis, to which it is forwarded by teletype. The information gathered in the form of

public health

OSINTSEVA, V. P.

## SURVEY OF CURRENT METHODOLOGICAL APPROACHES IN HYGIENIC RESEARCH

UDC: 613/614-07:001.8

Article by A.I. Bokina, N.N. Pushkina, V.P. Osintseva, N.T. Dmitriyev, Moscow,  
 Vsesoyuznyi Meditsinskii Nauchnyi SSSR, Russian. No. 1, 1972, pp. 65-70.

JPRS 55320

1 Mar 72

In accordance with the main direction of our Institute, investigation of the effect on the human body and on public health of diverse environmental factors, the chief direction of research in specialized laboratories is to determine the patterns of interaction between the organism and environment using physiological, biochemical, morphological, radiological, and physico-chemical investigative methods.

In the last few years, in connection with expanded studies of the effect of diverse environmental factors on the functional state of the organism and on public health, special attention has been given to development and adoption of new methodological approaches in conducting mass examinations. In this respect, a special place is occupied by methods of functional diagnosis of early functional changes in different systems and in the body as a whole. The main objective of mass examinations is not so much to detect overtly pathological consequences as to determine the degree of tension of regulatory mechanisms that prevent impairment of the normal state of the internal medium of the organism. Thus, for clinical and physiological surveys of the population such functional tests are used as the adrenal test, purine load test, diagnostic acid test, Volhard's and McClure-Aldrich tests, cold test, and a number of others.

Particularly fruitful are studies of interaction of different systems in the integral organism, permitting reliable substantiation of environmental conditions most compatible with a physiological state of the body.

Thus, in a mass study of the population for the purpose of investigating the effect of desalinated drinking water on the functional state of the organism, water-salt metabolism, cardiovascular condition, renal activity, gastrointestine tract function, and complex reflex drinking reactions were examined.

Only the indices that have actual significance for the organism can be characterized as having a criterion of harmful effect. For example, decreased



Pathology

USSR

UDC 616.61-002.151-036.8-07:616.61-073.916

CHUKAVINA, A. I., and GSINTSEVA, V. S., Chair of Infectious Diseases, Izhevsk Medical Institute

"Results of Investigation by Radioisotope Renography of Patients During Convalescence From Hemorrhagic Fever With a Renal Syndrome"

Moscow, Klinicheskaya Meditsina, Vol. 49, No. 4, Apr 71, pp. 76-78.

Abstract: The functional state of the kidneys of 78 patients during remote periods of convalescence from hemorrhagic fever with a renal syndrome was investigated by radioisotope renography, using  $^{131}\text{I}$ -hypuran. It was established that return of the functional state of the kidneys to normal generally took place within 3-6 months after onset of the disease and that it required up to one year in some cases.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--THE FUNCTIONAL STATE OF THE KIDNEYS STUDIED WITH THE AID OF  
RADIOISOTOPE RENOGRAPHY IN PATIENTS SUFFERING FROM HEMORRHAGIC FEVER  
AUTHOR--(02)-OSINTSEVA, V.S., TRUSOV, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 3, PP 37-42  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--HEMORRHAGIC FEVER, KIDNEY FUNCTION, RADIOACTIVE ISOTOPE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--2000/1463 STEP NO--UR/0497/TO/048/003/0037/0042  
CIRC ACCESSION NO--AP0125092

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125092

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING INVESTIGATION OF THE FUNCTIONAL STATE OF THE KIDNEYS BY MEANS OF RADIOISOTOPE RENOGRAPHY WITH THE AID OF RADIOIODINE LABELLED HYPPURAN OUT OF 42 PATIENTS SUFFERING FROM HEMORRHAGIC FEVER WITH THE RENAL SYNDROME AT THE LATE PERIOD OF CONVALESCENCE THERE WERE REVEALED MARKED CHANGES IN 24 PERSONS WHICH IN RENCGRAMS WERE MANIFESTED BY PROLONGATION OF THE EXCRETORY PHASE AND REDUCTION OF THE RENCGRAPHIC PEAK. OFTEN RENCGRAMS HAD A ROUNDISH ASPECT, RESEMBLING THE FORM OF A BELL. IT IS NECESSARY TO POINT TO THE PREVALENT AFFECTIION OF THE SECRETORY FUNCTION OF TUBULES REVEALED DURING RENCGRAMS OF A PATHOLOGICAL TYPE. CHANGES IN THE FUNCTIONAL CHARACTERISTICS OF THE KIDNEYS WERE MOST PERSISTENT IN A SEVERE COURSE OF THE DISEASE AND IN SOME CASES THEY COULD BE DETERMINED ONE YEAR AFTER THE ONSET OF THE DISEASE. IN HEMORRHAGIC FEVER WITH THE RENAL SYNDROME PREVALENT AFFECTIION OF ONE OF THE KIDNEYS IS POSSIBLE. RADIOISOTOPE RENCGRAPHY ENABLES TO DETECT PATHOLOGICAL SHIFTS IN PATIENTS DURING CONVALESCENCE IN COMPLETE ABSENCE OF COMPLAINTS AND NORMAL INDICES OF URINE ANALYSES, DISTINCTLY SHOWING THE DYNAMICS OF GRADUAL RESTORATION OF THE FUNCTIONAL STATE OF THE KIDNEYS. FACILITY: IZHEVSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--HARDENING OF ORGANOSILICON RESINS -U-

AUTHOR--(05)-OSIPCHIK, V.S., AKUTIN, M.S., VLASOV, A.S., MNATSAKANYAN,  
V.G., KOROLKOV, K.S.  
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,446  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970  
DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, SILICON COMPOUND, PLASTIC MECHANICAL  
PROPERTY, SCILICONE RESIN, ORGANOSILICON COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1419

STEP NO--UR/0482/10/000/000/0000/0000

CIRC ACCESSION NO--AA0128818

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AA0128818

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. SILICON COMPODS. WERE USED TO  
HARDEN ORGANOSILICON RESINS. TO IMPROVE THE PHYSICOMECH. PROPERTIES OF  
THE HARDENED PRODUCTS, 0.25-10 WT. PERCENT SiO WAS USED.  
FACILITY: MENDELEEV, D. I., CHEMICAL TECHNOLOGICAL INSTITUTE, MOSCOW.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--A TWO FREQUENCY METHOD FOR CONTROLLING QUADRUPOLE RELAXATION -U-  
AUTHOR--(04)-AYNBINDER, N.YE., GRECHISHKIN, V.S., OSTIPENKO, A.N., SHISHKIN,  
YE.M.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,  
NR 5, PP 1543-1548  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEAR ENERGY LEVEL, QUADRUPOLE MOMENT, EXCITATION ENERGY,  
SPIN LATTICE RELAXATION, RELAXATION PROCESS, RF FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3002/0010

STEP NO--UR/0056/70/058/005/1543/1548

CIRC ACCESSION NO--AP0127660

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2/2 015

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127660

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NUMBER OF NOVEL PHYSICAL EFFECTS WHICH APPEAR ON EXCITATION OF NUCLEAR QUADRUPOLE ENERGY LEVELS WITH TWO FREQUENCIES ARE DESCRIBED. IT IS SHOWN THAT BY INTRODUCING A SATURATING POWER IN TO THE ADJACENT TRANSITION ONE CAN CONTROL SPIN LATTICE RELAXATION. THE METHOD CAN BE EMPLOYED FOR DETERMINING THE RATION OF THE RELAXATION PROBABILITIES AND THE MAGNITUDE OF THE RADIO FREQUENCY FIELD IN A SATURATING PULSE. FACILITY: PERMSKIY GOSUDARSTVENNYI UNIVERSITET IM. A. M. GOR'KOGO.

UNCLASSIFIED

USSR

UDC 546.56;611.621;620.187-539.26

ZALUTSKIY, V. P., NESTERENKO, Ye. G., and OSIPENKO, I. A., Institute of Metal Physics, Academy of Sciences UkrSSR

"Structural Changes Upon Decomposition of Cu-Mn-Al Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 3, Sep 70, pp 627-633

Abstract: X-ray and electron-microscope studies were made of the structural changes in the process of decomposition of Cu-Mn-Al alloys. It is demonstrated that after annealing at 200-250° C, the x-ray diffraction pictures show satellites. An increase in the annealing temperature causes a change in the distribution of intensities in the diffraction maxima and leads to the appearance of reflections from the separated phase ( $\text{Cu}_9\text{Al}_4$ ). The orientation of the separation phase relative to the crystals of the initial alloy is determined. The results of the x-ray diffraction studies are compared with the electron-microscope studies, and the nature of the structural changes occurring upon decomposition of the Cu-Mn-Al alloy is discussed. It is determined that when the alloy  $\text{Cu}_2\text{AlMn}$  ages Ginzburg complexes occur in the early stages, while in the later stages the excess phase  $\text{Cu}_9\text{Al}_4$  is separated.

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USSR

UDC 547.29.118.07

TSVETKOV, YE. N., MALEVANNAYA, R. A., OSIPENKO, N. G., and KABACHNIK, M. I., Institute of Organo Elemental Compounds, Moscow, Academy of Sciences USSR

"A Method of Producing Phosphinylcarboxylic Acids"

Moscow, Otkrytiya, Izobrenteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1970, Author's Certificate No 270730, filed 29 May 68, p 23

Abstract: This Author's Certificate introduces a method of producing phosphinylcarboxylic acids except for  $\alpha$ -phosphonylacetic acid. As a distinguishing feature of the patent, salts of tri-valent phosphorus acids are intreacted with salts of halocarboxylic acids, except acetic, in the presence of heat with subsequent isolation of the goal product by conventional methods,

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AA 0043492

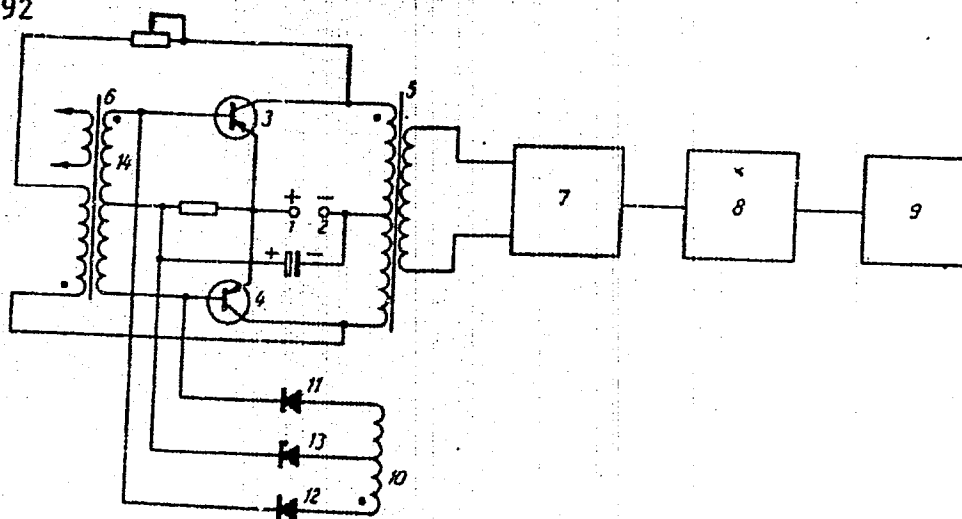
UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

242983 STABILIZED D.C. CONVERTER. Improved stabilization of the output voltage is achieved by introduction of the feedback winding (10) into the voltage step up transformer (5). Terminals (11) and (12) are connected through the diodes to the bases of the transistors (3) and (4) while the centre of the winding (13) is connected through the zenor diode to the emitter circuits of the transistors. Commutating transformer is (6), while (7), (8) and (9) are rectifying circuit, smoothing and load.

11.2.66 as 1055944/26-9. N. K. GANSKAY & V. A. OSIPENKO  
(23.9.69) Bul 16/5.5.69. Class 21a<sup>4</sup>. Int. Cl. H 02m.

AA0043492



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OSI PENKO, V. P.

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THE ZVENIGOROD EXPERIMENTAL STATION				5. Report Date	
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ZENKOV, I. VSELENNAYA, No 6, 1972, Moscow, Izdatel'stvo Nauka					
The report contains a discussion on the Zvenigorod Station, which was formed within the system of the Astronomical Council as an experimental station for optical observations of artificial earth satellites. The work of the station includes the designing and mounting of cameras for tracking satellites and the creation of new photographic methods of observation.					
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OSIPENKO, V. P.

JPRS 59567  
20 July 1973

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THE ZVENIGOROB EXPERIMENTAL STATION

[Article by V. P. Osipenko and Candidate of Physical and Mathematical Sciences V. A. Yurevich; Moscow, Zemlya i Voennoye, Russian, No 6, 1972, pp 54-57]

Stations for optical observations of artificial earth satellites began to be created in astronomical observatories, universities and many pedagogical institutions of our country in 1957. The Zvenigorod station, however, was formed within the system of the Astronomical Council as an experimental station. Besides observations, the work of the station includes the designing and mastering of cameras for tracking satellites and the creation of new photographic methods of observation. The organizers of the station were Ye. Z. Gindlin, A. G. Hasevich, and A. M. Lozinskiy.

The station was located on the old grounds of the State Astronomical Institute named P. K. Shernberg in Moscow, but already in 1958 it was transferred to one of the picturesque regions of Podmoskov'ye, in the vicinity of Zvenigorod, where conditions for astronomical observations are especially favorable.

At first the co-workers of the station used photographic cameras which seem small in comparison with modern giant telescopes. The diameter of the camera lenses was 10 cm and the focal distance was 25 cm. Those cameras served science well, and many thousands of photographs of artificial earth satellites were made with them. The photographs were used to solve the theoretical calculation of orbits and ephemerides of satellites, to determine the density of the atmosphere and to solve many other problems, for example, to explain the influence of the pressure of solar rays on the motion of a satellite in orbit.

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USSR

UDC 621.382.002

YEFIMOV, YE.A., YERUSALIMCHIK, I.G., OSIPENKOVA, E.I., SOKOLOVA, G.P.

"Electrodeposition Of Copper In Order To Obtain Volume Leads Of Semiconductor Devices"

Elektron. tekhnika. Nauch.-tekhn.sb. Poluprovodn.prihory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1970, Issue 6(56), pp 89-92 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10W488)

Translation: Preceding electrochemical deposition of copper volume leads on a sputtered 0.5-1 $\mu$  thick Cu layer with masking by "383" photoresist, processing of the substrate in concentrated HCl during 15--20 sec at a temperature of 20 plus or minus 2 $^{\circ}$  C is optimum. The electrolyte composition 200 g/l CuSO<sub>4</sub>, 5 H<sub>2</sub>O, 50 g/l H<sub>2</sub>SO<sub>4</sub>; 0.04 g/l OS(NH<sub>2</sub>)<sub>2</sub>; 0.04 g/l NaCl gives the greatest increase of the diameter of the local deposition of Cu. With a 20 $^{\circ}$  C temperature of the solution, the current density is 0.1 a/cm<sup>2</sup>, the height of the deposited columns of Cu not greater than 40 micrometer, the diameter of the column during the time of deposition (50 min) is increased by 5--10 micrometer. Cylindrical leads of proper form are obtained with horizontal immersion of the working wafer into the electrolyte. Correction of the electrolyte by addition of thiourea is necessary in the operating process. The assumed mechanism of chemical and electrochemical reactions occurring during electrodeposition of Cu is described. 1 ill. 4 ref. I.M.

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USSR

UDC 612,79.015.11.014.424

SAVCHENKO, Ye. D., and OSIPENKOVA-VICHTOMOVA, T. K., Moscow Scientific Research Institute of Roentgenology and Radiology, Ministry of Public Health, RSFSR

"The Effect of Bremsstrahlung Radiation Emitted by 25 MEV Betatron on the Activity of Nonspecific Phosphatases of the Skin"

Moscow, Arkhiv Patologii, Vol 33, No 11, 1971, pp 28-32

Abstract: Shifts in alkaline and acid phosphatase activity in various parts of the skin were determined. Twenty-two patients with malignant tumors were treated using a 25 Mev betatron source; the single dose was 300 rad, the cumulative dose, 3,000-12,000 rad over a period of 3-9 weeks. Histochemical studies were conducted for 4-1/2 years following treatment. In 18 out of 22 cases, a small amount of acid phosphatase was found in normal skin, and in 4 cases, alkaline phosphatase was present; both were found primarily in the basal layer. During the first few days following irradiation in 1,200-1,500 rad doses, a small amount of alkaline phosphatase appeared in cells of the granular and basal layers; it increased in cells of the walls of small vessels (endothelium and adventitia) and in nuclei of perivascular infiltrate cells. Large amounts were found in lymphocytes, less in macrophages. Acid phosphatase activity was concentrated in the basal layer. By the end of one month,

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SAVCHENKO, Ye. D., and OSIPENKOVA-VICHTOMOVA, T. K., Arkhiv Patologii, Vol 33, No 11, 1971, pp 28-32

acid phosphatase increased, while alkaline phosphatase decreased.

The first days following 3,000 rad treatment showed impaired differentiation of the epidermis with obliteration of cellular layers. Acid and alkaline phosphatase increased in all epidermal layers; and acid phosphatase appeared in nuclei of the stratum corneum (parakeratosis).

A larger dose (6,000-7,000 rad) and a longer time lapse (2-4 months) resulted in greatest nonspecific enzyme activity in all cell layers. Differentiation in epidermal cells with proliferation in the presence of skin atrophy increased. Proliferating cells contained large amounts of alkaline and acid phosphatase. Following a 6,000-7,000 rad dose, nonspecific phosphatase activity with proliferation of cells and impaired differentiation was observed even after 1-1/2 years.

A 10,000 rad dose greatly reduced the content of alkaline and acid phosphatase in the skin with lasting results; cellular enzymatic activity had not resumed after 1-4-1/2 years. Following a 6,000 rad dose, phosphatase content in the

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SAVCHENKO, Ye. D., and OSIPENKOVA-VICHTOMOVA, T. K., Arkhiv Patologii, Vol 33, No 11, 1971, pp 28-32

epidermis approached the normal level after 4-1/2 years. The findings indicate a shift in enzymatic activity in epidermal cells, which can to some extent explain impaired differentiation and proliferation of epithelial cells.

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Acc. Nr: **AP 0047341**

Ref. Code: **UR0589**

**PRIMARY SOURCE:** Vestnik Khirurgii imeni I. I. Grekova, 1970,  
Vol 104, Nr 1, pp 29-35

**RADIOISOTOPE INVESTIGATION OF THE ESOPHAGUS IN SURGICAL CLINIC**

By A. A. Rusunov and T. A. Osipkova

Radioisotope investigation of the esophagus was performed in 78 patients, 31 of them having cancer of the esophagus, 16—cardioesophageal cancer, 6—gastric cancer, 18—non-cancerous lesions of the esophagus and 7—normal esophagus. As a tracer phosphorus—32 was used intravenously. The number of impulses recorded over the intact esophageal portion was taken as 100 per cent. In cancer of the esophagus and cardioesophageal region at the level of tumor the isotope accumulation reached 160—600%. In esophagitis and diverticula with diverticulitis phenomena it amounted to 135 per cent 1—3 hours following the investigation and became normal after 48 hours. In leiomyoma, periesophagitis, esophageal dystonia a significant isotope accumulation was noted. The data obtained were used for establishing a differential diagnosis between cancer and non—cancerous affection of the esophagus, and also in suspicion to tumor recurrence in intrathoracic enterogastric anastomoses and enteroesophageal anastomoses, and if there is a necessity to determine precisely the tumor spread. Thirty seven patients were operated upon and the data of radioisotope investigation were supported by surgical findings. This method is positively evaluated and it should be recommended for practical use in surgical departments.

REEL/FRA  
**19790867**

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1/2 015  
TITLE--SCIENTISTS EXPLORING THE MYSTERIES OF OCEANS --U--  
AUTHOR--OSIPOV, A.  
COUNTRY OF INFO--USSR  
SOURCE--SOTSIALISTICHESKAYA INDUSTRIYA, JUNE 18, 1970, P 4, COLS 3-8  
DATE PUBLISHED--18JUN70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--DEPTHOMETER, OCEANOGRAPHIC INSTRUMENT, OCEANOGRAPHIC RESEARCH FACILITY, OCEANOGRAPHIC PERSONNEL/(U)MIKHAIL LOMONOSOV SHIP  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/0872  
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PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AN0107401

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPTH PROBE "ISTOK" IS ONE OF THE INSTRUMENTS DEVELOPED AT THE MARINE HYDROPHYSICAL INSTITUTE OF THE UKRAINIAN ACADEMY OF SCIENCES. ALL THE INSTRUMENTS DEVELOPED AT THE LABORATORIES OF THE INSTITUTE ARE ALWAYS TESTED FIRST IN EXPEDITIONS UNDERTAKEN BY RESEARCH VESSELS "MIKHAIL LOMONOSOV" AND "AKADEMIK VERNADSKIY". DEPUTY DIRECTOR OF THE INSTITUTE IS V. BELYAEV, DOCTOR OF PHYSICAL MATHEMATICAL SCIENCES. A PHOTOGRAPH IS GIVEN WHICH SHOWS DIVERS SCHOOL OF THE CENTRAL MARINE CLUB OF THE DSSAF S.S.S.R. IN MOSCOW. THE ANNUAL ATTENDANCE OF THE SCHOOL IS 300.

UNCLASSIFIED

AN0032614

UR9027

AUTHOR-- OSIPOV, A.

TITLE-- TINY "IRA"

NEWSPAPER-- VECHERNYAYA MOSKVA, MARCH 5, 1970, P 2, COL 3  
ABSTRACT-- THE "IRA-3" IS THE ACHRONIM WHICH STANDS FOR THE IMPULSE  
X-RAY APPARATUS THAT HAS BEEN DEVELOPED AT A SPECIAL DESIGN BUREAU  
OF THE MINISTRY OF INSTRUMENT CONSTRUCTION, AUTOMATION AND CONTROL  
SYSTEMS UNDER THE DIRECTION OF PROFESSOR V. TSUKERMAN. IN CONTRAST  
TO IRA-1 AND IRA-2, THE NEW DEVICE WEIGHS ONE-TENTH AS MUCH WHICH  
IS ONLY 2 KILOGRAMS. IT CAN BE USED TO EXAMINE THE BEHAVIOR OF  
TURBINE BLADES, THE QUALITY OF WELDED JOINTS OR STEEL PLATES UP TO  
10 MM THICK. THE IRA-3 CAN PHOTOGRAPH HIGH-SPEED EVENTS, SUCH AS  
THE WELDING ARC, SINCE ITS RADIATION FLASH IS ONE-ONE HUNDRED  
MILLIONTH.

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USSR

UDC 533.6.011.31

KRAYKO, A. N., and OSIPOV, A. A., Moscow

"Investigation of the Reflection of Disturbances From the Subsonic Part of the Laval Nozzle"

Moscow, Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 73, pp 84-93

Abstract: The problem of the reflection of longitudinal disturbances from subsonic and transonic parts of the Laval nozzle is investigated. It is assumed that the nozzle is next to the cylindrical tube and that the incoming disturbance is a plane harmonic Riemann wave. The numerical integration of proximate equations of axisymmetric transitional flow of an ideal nonviscous and non-heat-conducting gas is used for solving the problem. This method makes it possible to rate the influence of nonlinear effects as well of effects of the two-dimensionality of the flow. The results are compared with outcomes of calculations carried out in conformity with

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USSR

KRAYKO, A. N., and OSIPOV, A. A., *Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza*, No 1, Jan-Feb 73, pp 84-93

the well-known theory of H. S. Tsien, L. Crocco, and Chzhen Sin'yi, based on the linearization of equations of one-dimensional flow. The effect of the nozzle shape on the reflection of disturbances is analyzed by reference to calculations for nozzles differing from the investigated Laval nozzle. Five figures, twelve formulas, twenty three bibliographic references.

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USSR

UDC 533.6.011.5

OSIPOV, A. A. (Moscow)

"Solution of a Variational Problem of Construction of the Contour of a Nozzle Capable of Operation in Two Modes"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 4, 1973, pp 97-103

Abstract: The paper deals with the solution of the problem of optimal profiling of the supersonic part of a nozzle in cases where the engine is intended for operation at essentially different modes. Two cases are considered. In one of the cases the nozzle may be regulated by the insertion of a central body into it; in such a case only two operating modes of the nozzle are possible -- with the central body and without it. In the other case the flow parameters at the intake of the nozzle, which does not have a subsonic part, are altered on the basis of certain factors that apply in the case of a fixed configuration of the nozzle (for example, change of fuel consumption, of parameters at air-intake, etc.). The necessary conditions for determining the shape of the optimal contour are obtained, and a numerical algorithm is developed for constructing such a contour. Examples are given of optimal nozzles, the

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USSR

OSIPOV, A. A., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 4, 1973, pp 97-103

contours of which have been constructed by means of this logarithm, and they are compared with nozzles selected on the basis of other considerations. 4 figures. 2 tables. 5 references.

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USSR

UDC 533.6.011.5

OSIPOV, A. A., Moscow

"On the Solution of the Variational Problem of the Construction of the Contour of the Supersonic Portion of a Nozzle"

Moscow, Mekhanika zhidkosti i gaza, No. 5, Sep/Oct 72, pp 104-111

Abstract: The problem of constructing a rigid, irregular contour of a supersonic nozzle that is optimal in the sense of the solution of some trajectory problem is investigated. The case investigated is when the nozzle does not have a supersonic portion and at its input (at the end of the combustion chamber) there occur changes in the parameters of the gas with time. At each point in time the flow at the input to the nozzle is assumed uniform and supersonic. If deviations in the Mach number of this flow from a certain value exceeding unity are slight, the deviations in the dimensionless flow parameters corresponding to them from their stationary values in the region of definition of the contour required can be found by solving a certain linear problem. It is shown within the limits of the validity of this solution that the desired optimal contour should be selected from a known family

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USSR

OSIPOV, A. A., Mekhanika zhidkosti i gaza, No. 5, Sep/Oct 72, pp 104-111

of contours producing maximum thrust in the stationary problem. To explain the problem of the range of validity of this conclusion, numerical integration of the nonlinear equations is carried out for flow parameters of the gas and the Lagrange multipliers, and the exact condition for optimality is tested. The calculations show that the solution found on the basis of the linear analysis is applicable not only for small, but for very considerable changes in the Mach number at the input to the nozzle.

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USSR

KRAYKO, A. N., OSIPOV, A. A., Moscow

"On Plotting the Contour of a Laval Nozzle with Regard to Change of Flight Conditions of a Space Vehicle"

Moscow, Prikladnaya Matematika i Mekhanika, Vol. 34, No. 6, Nov/Dec 70, pp 1067-1075

Abstract: A solution is found for the problem of plotting the rigid (nonadjustable) contour of the convergent-divergent section of a nozzle which is optimum in the sense of solving some trajectory problem with regard to change in the flight conditions and the mode of engine operation. The space vehicle is assumed to be a material point of variable mass, and drag at each instant is assumed to be equal to the corresponding steady-state value. The same approach is used to analyze flow in the nozzle. This means that the pressure and other parameters at each instant are defined by the equations of steady-state flow (in the coordinate system associated with the nozzle) under the conditions which exist at the nozzle inlet at that instant. In addition to the general results, two cases are studied in detail where the solution of the problem with the use of derived optimality conditions is comparatively simple. The first case is realized when the distribution of Mach numbers at  $1/2$

USSR

KRAYKO, A. N., OSIPOV, A. A., Prikladnaya Matematika i Mekhanika, Vol 34, No 6, Nov/Dec 70, pp 1067-1075

the nozzle inlet does not change during flight. It is found that the optimum contour in this case is a member of a family of contours which correspond to solution of a variational problem with fixed conditions. The second case is realized when the flow at the nozzle inlet remains uniform and supersonic throughout the flight, and the nozzle is flat and "short". In this instance, the resultant optimum nozzle is rectilinear. The problem of profiling the convergent-divergent section of a flat or axisymmetric nozzle which realizes maximum thrust with a fixed flow at the inlet and predetermined external conditions has already been fairly completely solved. The problem as formulated in this paper deals with the fact that changes in flight conditions and the parameters at the inlet in many applications may be quite considerable, the flow at the inlet to the Laval section of the nozzle changing as a result of variations in flight conditions and changes in engine operation.

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USSR

UDC: 621.375.82

GORDIYETS, B. F., OSIPOV, A. I., SHELEPIN, L. A.

"Oscillatory Relaxation in Gases, and the Molecular Laser (Part I)"

Moscow, Kolebatel'naya relaksatsiya v gazakh i molekulyarnyye lazery (Ch. I). Fiz. in-t AN SSSR. Optich. labor. (cf. English above. Physics Institute of the Soviet Academy of Sciences. Optics Laboratory), preprint No 135, 1972, 76 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D985 [résumé])

Translation: The article is a state-of-the-art survey of the theory of oscillatory relaxation in gases and its application to the theory of molecular lasers. A brief presentation is made of the procedure for calculating the probabilities of vibrational transitions in collisions, and the formulas which are used in practical computations are presented. The authors discuss relaxation of diatomic and polyatomic molecules modeled by harmonic oscillators. A detailed analysis is made of oscillatory relaxation in a system of harmonic oscillators. Quasistationary distributions of the populations of vibrational levels which arise under appreciably nonequilibrium conditions are considered both in a single-component molecular system and in gas mixtures. Relaxation in the presence of sources of vibrationally excited molecules is discussed, and the mechanisms of operation of lasers based on vibrational-rotational transitions are examined. Bibliography of 106 titles.

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**Lasers and Masers**

USSR

GORDIYETS, B. F.; OSIPOV, A. I.; SHELEPIN, L. A. (Lebedev Physics Institute, USSR Academy of Sciences)

"Kinetics of Nonresonance Vibrational Exchange and Molecular Lasers"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; January, 1971;  
pp 102-13

ABSTRACT: The authors studied the kinetics of nonresonance vibrational exchange in molecular systems under conditions in which equilibrium with respect to the vibrational degrees of freedom becomes established more rapidly than transition of energy to translational degrees of freedom. Distributions of the vibrational energy (taking into account two-quantum transitions) were found for a binary mixture of harmonic oscillators and a one-component system of anharmonic oscillators. The distributions depend substantially on the relation between the vibrational quanta. A number of applications of nonresonance exchange in molecular lasers were investigated. Possibilities for "ampli-

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USSR

GORDIYETS, B. F., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki;  
January, 1971; pp 102-13

fyng" the inverse population by varying the gas and vibrational temperatures in jets and during chemical pumping were investigated. The possibility of obtaining a second oscillation zone in the upper vibrational levels of diatomic molecules was indicated. Gas mixtures suitable for oscillation can be chosen on the basis of the results obtained.

The article includes 28 equations and 4 figures. There are 12 references.

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USSR

UDC: 621.382:621.375

OSIPOV, A. K.

"Semiconductor Electrometric Amplifiers"

Moscow, Priboiy i tekhnika eksperimenta, No. 1, January-February, 1971, pp 7-18

**Abstract:** This review of semiconductor electrometric amplifiers defines such circuits as those required to strengthen currents of  $10^{-12}$  to  $10^{-17}$  A from sources with an internal resistance of  $10^9$  to  $10^{14}$  ohms. The best components for such circuits are semiconductors, since they satisfy modern requirements of reliability, length of service, dimensions, and weight, and are easier to manufacture and operate than their predecessors. Considered in this review are amplifiers with bipolar or field-effect transistors and those amplifiers involving signal transformation through the use of modulators with varicaps. The characteristics of these various types are given as well as samples of the circuitry in which they are applied. It is stated that the most widely used semiconductor devices for elec-

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USSR

OSIPOV, A. K. Pribory i tekhnika eksperimenta, No 1, January-February, 1971, pp 7-18

trometric applications are field-effect transistors, which are capable of sensitivities of  $10^{-16}$  to  $10^{-17}$  A for an input resistance of  $10^{12}$  to  $10^{14}$  ohms and time constants of 10 seconds. A bibliography of 52 titles is appended. The author is connected with the Moscow Engineering-Physical Institute.

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USSR

UDC: 621.373:530.145.6

KURCHATOV, Yu. A., OSIPOV, A. S., SIDOROVA, L. A.

"Determination of the Permissible Spatial Mismatch of a System of Two Open Resonators"

Elektron. tekhnika. Nauchno-tekhn. sb. Kontrol'no-izmerit. apparatura (Electronic Technology. Scientific and Technical Collection. Monitoring and Measuring Equipment), 1970, vyp. 2 (20), pp 84-88 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D252)

Translation: An expression is presented which defines the relative change in the coupling factor between two open spherical resonators matched by a lens when they are mutually displaced with respect to the matched state. Experiments are described for empirically checking this relationship on an installation with a laser and a spectrum analyzer. Satisfactory agreement is found between theory and experiment. Four illustrations, one table, bibliography of three titles. N. S.

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USSR

UDC 621.373:530.145.6:621.317.17

OSIPOV, A. S.

"On the Problem of Spectral Analysis of Laser Emission"

Elektron. tekhnika. Nauchno-tekhn. sb. (Electronics Technology. Scientific and Technical Collection), 1970, ser. 11, vyp. 1(19), pp 73-82 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D335)

Translation: Conditions are determined under which it becomes possible to register the spectrum of transverse and longitudinal laser modes with the aid of a scanning Fabry-Perot interferometer made up of spherical mirrors. Methods for technical solution of the problem are pointed out. Resume.

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USSR

UDC: 681.2.088.519.27

OSIPOV, A. V.

"Approximate Methods of Eliminating the Readings of Maladjusted Instruments in Automatic Measurements"

Tr. 1 Vses. simpoziuma po statist. probl. v tekhn. kibernet. Identifik. i apparatura dlya statist. issled. (Works of the First All-Union Symposium on Statistical Problems in Technical Cybernetics. Identification and Equipment for Statistical Research), Moscow, "Nauka", 1970, pp 280-285 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 9 Sep 70, Abstract No 9.32.55)

Translation: The author discusses methods of processing the readings of malfunctioning instruments by statistically testing hypotheses that all observations belong to one general class, against the competing hypothesis that questionable observations belong to another class. The problem is solved on the assumption that the parameters of the competing hypothesis are either determined beforehand from the criterion of maximum measurement precision, or are not explicitly given. Bibliography of 8 titles.

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USSR

GUSEV, B. V., ZAZINKO, V. G., ZAYATS, Yu. L., OSIPOV, B. A.

"Graphic Analysis in the Study of Mathematical Models"

Graficheskiy Analiz pri Issledovanii Matematicheskikh Modeley [English Version Above], Dnepropetrovsk, 1972, 8 pages (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V710 DEP, by the authors).

Translation: Graphic analysis of mathematical models of technological processes is applied. It is demonstrated using two examples, determination of the optimal parameters of vibration and composition of concrete.

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USSR

UDC: 530.182:537.226.1

MURZIN, S. N., OSIPOV, B. D.

"Change in the Static Permittivity of a Gas in a Strong Resonance Field"

Leningrad, Optika i Spektroskopiya, Vol 32, No 2, Feb 72, pp 430-432

Abstract: The authors investigate the change in static permittivity of ammonia in the case of saturation of the strong lines of the inversion spectrum (transitions  $J,K=3,3; 2,2; 1,1$ ). It was found that the dependence of this change on the frequency of the external field is close to the form of the absorption line and that the magnitude of the observed effect is of the same order as predicted by calculations. Two figures, bibliography of three titles.

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USSR

UDC: 621.396.626

OSIPOV, B. D.

"On the Resistance to Interference of Narrow-Band Multiple-Position Frequency Telegraphy Systems"

Moscow, Radiotekhnika, Vol 26, No 6, Jun 71, pp 37-42

Abstract: Simple expressions are derived for calculating the conditions of probable distortions of signals in narrow-band multiple-position frequency telegraphy systems subjected to the simultaneous effect of interference from extraneous radio stations and multiple-beam propagation of signal energy in the case of independent selective fading of the signal components. The following model is assumed for a channel with variable signal and interference parameters: 1. the probability density distribution function for the amplitude envelopes of each of the beams of the signal and the station interference is described by Rayleigh law; 2. amplitude fading of each of the beams of the signal on all frequencies and the fading of station interference are independent, which is the case under actual conditions of communication when the beams are reflected from different regions of the ionosphere or troposphere and when there are considerable frequency displacements between signals; 3. the relative delay time of the signal beams is greater than the maximum permissible distortions of the duration of an elementary transmission; 4. signal and interference parameters change slowly in comparison with the duration of a code symbol, which is achieved by appropriate selection of the duration of an elementary code transmission.

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USSR

UDC: 621.3.019.3

OSIPOV, B. G.

"On the Signal-to-Noise Ratio in Amplifier Systems With Mutual Feedback"

Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR (Works of Academic Institutes of Communications. Ministry of Communications of the USSR), 1971, vyp. 53, pp 90-98 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A121)

Translation: The paper deals with the relation between the signal-to-noise ratio and reliability in a system of amplifiers with mutual feedback. It is found that use of a system of amplifiers which is characterized by a rectangular  $\beta$ -chain matrix leads to improvement of the reliability of the system and deterioration of the signal-to-noise ratio. It is shown that in an amplifier system characterized by a triangular  $\beta$ -chain matrix, the signal-to-noise ratio may be increased with a concomitant loss of reliability. Resumé.

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USSR

UDC 621.396.622.2:621.372.622

OSIFOV, B. G.

"Calculating the Amplification of Transistorized Frequency Converters"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi  
Vyp. 1 (Materials of the Scientific and Technical Conference. Leningrad  
Electrotechnical Communications Institute. Vyp. 1), Leningrad, 1970, pp  
179-184 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D19)

Translation: This article contains a study of a method of calculating the amplification of transistorized frequency converters where a side frequency band is used as the useful conversion product. It is demonstrated that the amplification of a converter operating in the amplifying mode can be expressed in terms of the halfsum of the amplification with respect to power and the initial and carrier oscillations in a single-cycle converter. The magnitude of these amplifications must be calculated independently beginning with the assumption that the cascade operates in the amplification mode A for both oscillations.

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1/2 026 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--THE DIFFERENTIAL DIAGNOSIS OF ACUTE PANCREATITIS AND MYOCARDIAL  
INFARCTION -U-  
AUTHOR--(03)-OSIPOV, B.K., SHIMELIOVICH, L.B., ELKONIN, B.L.  
COUNTRY OF INFO--USSR  
SOURCE--KHIRURGIYA, 1970, NR 4, PP 85-89  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DIAGNOSTIC METHODS, PANCREAS, MYOCARDIUM, ELECTROCARDIOGRAPHY,  
URINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1983/1231 STEP NO--UR/0531/70/000/004/0085/0089  
CIRC ACCESSION NO--AP0054126  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054126

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER DEALS WITH THE DIFFERENTIAL DIAGNOSIS OF ACUTE PANCREATITIS AND MYOCARDIAL INFARCTION IN CONNECTION WITH THE POSSIBILITY OF DEVELOPMENT OF THE PANCREATITIC SYNDROME OF MYOCARDIAL INFARCTION AND TRANSITORY ELECTROCARDIOGRAPHIC CHANGES IN ACUTE PANCREATITIS. IN THE AUTHORS OPINION AN INCREASED URINARY LEVEL OF DIASTASE COULD NOT SERVE AS A DECISIVE CRITERION OF THE DIFFERENTIAL DIAGNOSIS OF ACUTE PANCREATITIS AND MYOCARDIAL INFARCTION. AT THE SAME TIME, THE APPEARANCE OF AN ELECTROCARDIOGRAPHIC PICTURE OF MACROFOCAL MYOCARDIAL INFARCTION IN THE PRESENCE OF A MARKED AND EVEN PREDOMINANT ABDOMINAL SYMPTOMATICS IN COMBINATION WITH AN AUGMENTED DIASTASURIA MAKE IT POSSIBLE TO DIAGNOSE MYOCARDIAL INFARCTION WITH THE PANCREATITIC SYNDROME. SUCH PATIENTS ARE SUBJECT TO HOSPITALIZATION INTO THE RAPEUTIC DEPARTMENTS FOR THE INSTITUTION OF THE REQUIRED CONSERVATIVE THERAPY. DIFFERENTIATION BETWEEN ISCHEMIC ELECTROCARDIOGRAPHIC CHANGES IN ACUTE PANCREATITIS AND MICROFOCAL MYOCARDIAL INFARCTION, WITH THE PANCREATITIC SYNDROME, IS POSSIBLE ONLY IN THE PROCESS OF DYNAMIC CLINICO ELECTROCARDIOGRAPHIC OBSERVATION.

UNCLASSIFIED

USSR

UDC 536.46:533.6

2

KALABUKHOV, G. V., RYZHIK, A. B., YURAMNOV, Yu. A., SIDOROV, V. M., OSIPOV, B. R., FAYERMAN, S. N.

"On the Effect of Reaction-Kinetic Properties of an Inflammable Flow in the Combustion of Aluminum Powders"

V sb. Goreniiye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 204-206 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B969)

Translation: Shock tube studies were made of the combustion of aluminum powder when detonation waves act on it. These waves differ in intensity and chemical composition. It was established that the increase in the detonation rate of the gas mixtures impedes combustion to a greater degree than the detonation temperature is lowered. The positive effect of oxygen, carbon dioxide, and small quantities of nitrogen and argon on the combustion of disperse aluminum is noted. Rarefaction of the stoichiometric mixture of hydrogen and oxygen with light gases (hydrogen and helium) leads to a decrease in the degree of combustion of the powder. 5 ref. Authors' abstract.

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Luminescence

USSR

UDC 621.3.032.35:541.182.65

OSIPOV, B. S., MERKUSHEV, O. M., LAVOROV, I. S., and KRAVTSOV, V. D., Leningrad  
Technological Institute imeni Lensovet

"Electrophoretic Precipitation of the Suspensions of Electroluminophores"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 46, No 4, Apr 73, pp 796-800

Abstract: The process of electrophoretic precipitation of electroluminophores from suspensions, and their behavior in electric field was studied in order to determine basic laws of the formation of electroluminescent panels (ELP). To obtain desired ELP by the electrophoretic method, it is necessary to use a luminophore with uniform distribution of the activator's concentration among its particles, or the direction of the electric field and the concentration of the suspensions have to be selected so that they would fall in the range of the aggregation of particles. The brightness of the ELP obtained in this fashion should exceed the brightness of the panels obtained by the pulverization method.

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Therium and Uranium Refining

USSR

UDC 550.4:541.123:546.791

RAFAL'SKIY, R. P., and OSIPOV, B. S.

"Reduction of Hexavalent Uranium With Hydrogen Sulfide in Aqueous Solutions at Elevated Temperatures and Pressures"

Moscow, Atomnaya Energiya, Vol 30, No 1, Jan 71, pp 52-53

Abstract: In testing the equilibrium concentration of uranium in relation to the amount of  $H_2S$  in an ampule at different temperatures it was found that at 100 and 150° C the uranium concentration grew with increased  $H_2S$  content. The assumption was made that this was caused by the formation of hydrosulfides or, more probably, hydrosulfides of uranium. At 200° C a "normal" relationship was observed; with increased concentration of the reducing agent the uranium concentration in the solution was decreased.

In experiments with bicarbonate solutions a 0.1 N solution of  $NaHCO_3$  served as the initial solution. The uranium concentration in it, amounting to 0.05 g/l, was created by dissolving  $UO_3$ . After filling the ampule with the solution and sealing it, the ampule was heated for 76 hours at 200° C. In the bicarbonate solution the same relationship was observed as with  $H_2S$ .

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USSR

RAFAL'SKIY, R. P., and OSIPOV, B. S., *Atomnaya Energiya*, Vol 30, No 1, Jan 71, pp 52-53

For small quantities of  $H_2S$  the concentration of uranium in the acid and carbonate medium was very close, but at  $V_{H_2S} = 32 \text{ cm}^3$  the concentration in the bicarbonate solution was an order of magnitude greater than in the sulfate. If the effect of the hydrogen sulfide on uranium concentration was really caused by the formation of complexes, then on the basis of experimental data it can be concluded that the bicarbonate medium is more favorable for this process.

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Soviet Inventions Illustrated, Section II Electrical, Derwent,

UR 0482

2/70

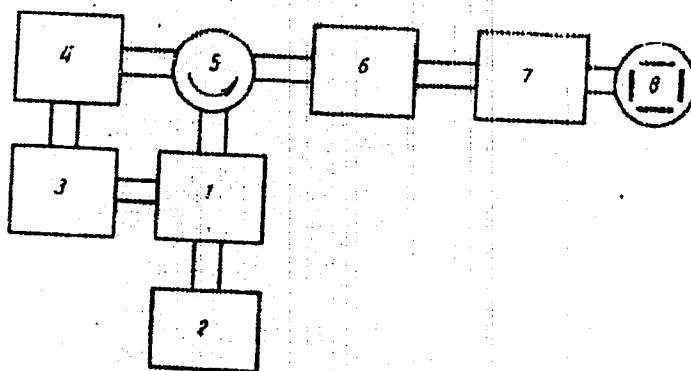
242976 METHOD OF MEASUREMENT OF INSTABILITY OF  
AMPLIFIER containing a tunnel diode by  
connecting the amplifier (1) to the DC source  
(2) and modulating the potential with video  
impulses from generator (3) synchronised by HF  
generator (4). Signal from (4) pass through  
circulator (5). The measure of instability of  
the amplifier is given by the depth of modulation  
shown by the display unit (8).

26.2.66 as 1058084/26-9 E.E. OSIPOV (17.1.69)  
Bul 16/5.5.69. Class 21a<sup>2</sup>. Int.Cl.H 03f.

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USSR

UDC 537.324

OSIPOV, E.V., KORNYUSHIN, YU.V., VSEVOLODSKIY, P.F.

"Production Of Cooling Because Of Anisotropy Of Thermoelectric Properties"

Elektron.tekhnika. Nauch.-tekhn.sb. Kriogen.elektronika (Electronics Technology. Scientific-Technical Collection. Cryogenic Electronics), 1971, Issue 1(3), pp 111-115 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B220)

Translation: In an analytical manner the possibility is determined of the production of a temperature difference because of anisotropy of the thermoelectric properties of crystals in the absence of a magnetic field. In contrast to a Peltier cooler in which cooling is achieved because of the flow of an electric current across a contact between two different materials, in the case considered the cooler can be made from one material. For single crystals of the solid solutions Bi-Sb at a temperature of  $100^{\circ}\text{K}$  the temperature difference amounts to  $\sim 12.5^{\circ}\text{K}$

1/1

USSR

UDC 537.324

OSIPOV, E.V., KISLOVSKIY, YE.N., REVUK, M.YA.

"To The Problem Of The Technology Of Production Of Galvanomagnetic Cooling Elements"

Elektron.tekhnika.Nauch.--tekhn.sb. Kriogen.elektronika (Electronics Technology. Scientific-Technical Collection. Cryogenic Electronics), 1971, Issue 1(3), pp 167-171 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B221)

Translation: The structure of the surface layers of single crystals of bismuth after electro-spark processing of the facets was determined by the metallographic method. The small pits [yamka] of etching were used to determine a defective layer. The thickness of the disturbed layer after electro-spark cutting amounted to 120 micron which is smaller than with diamond cutting. 5 ill. 10 ref.N.K.

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USSR

KARAGODINA, I., Chief of the Laboratory of the Moscow Scientific-Research Institute of Hygiene imeni F. F. Erisman, and OSIPOV, G., Deputy Director of the Scientific-Research Institute of Structural Physics, Gosstroy SSSR [State Committee for Construction]

"Noise Must Be Controlled"

Moscow, Medistinskaya Gazeta, 7 Jun 72, p 2

Abstract: Because of increased horse power and speed of vehicular traffic, urban noise now reaches 80-90 decibels, and, being present 24 hours a day, is worse for man than industrial noise. A "noise map" of Moscow shows traffic conditions today, with an estimated 7-10 decibel increase for 1980-1990. On this basis plans for noise control measures and residential construction are made along three principal directions: Study of the sources of traffic and household noise, patterns of its distribution in areas of urban construction, and effect on the human body. Laboratories have been established operating with specialists in various fields, latest equipment, and methods for electrophysiological, biochemical and histological investigation. Studies were performed in the field (inhabited apartments, microregions, streets, hospitals, sanatoriums, and schools), on different age and occupation groups, as well as on animals. It was established that noise caused constant

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USSR

KARAGODINA, I., et al., Medistinskaya Gazeta, 7 Jun 72, p 2

tension of the auditory analyzer; the auditory threshold increased by 10-25 decibels; and an inhibitory process developed in the cerebral cortex, altering the conditioned-reflex function. Attention and efficiency, especially in mental work, and particularly in children, were lowered. The lack of rest after a day's work accumulates, resulting in disturbance of the central nervous system and hypertension. Constant noise causes ulcerative disease and gastritis through disturbance of the stomach's function. Noise norms have been established for residential housing and introduction of electric and steam-driven automobiles is being planned. Optimal planning methods for the building, greening, and zoning of urban areas are urged, with laws to be worked out through the combined efforts of hygienists, machine makers, architects and builders.

2/2

- 12 -

019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--TRANSLATIONAL ROTATIONAL LUNAR MOTION UNDER THE INFLUENCE OF THE  
EARTH'S ATTRACTION -U-  
AUTHOR--DSIPOV, G.F.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ASTRONICHESKIY ZHURNAL, VOL 47, NO 2, 1970, PP 421-425

DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES, ASTRONOMY, ASTROPHYSICS

TOPIC TAGS--ROTATION, FIRST APPROXIMATION, CELESTIAL BODY MOTION, MOON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3001/0120

STEP NO--UR/0033/70/047/002/0421/0425

CIRC ACCESSION NO--AP0125936

UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125936

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER GIVES A SOLUTION FOR THE PROBLEM OF TRANSLATIONAL ROTATIONAL MOTION OF A DYNAMICALLY SYMMETRIC MOON UNDER THE INFLUENCE OF ATTRACTION OF A SPHERICAL EARTH. IN THE FIRST APPROXIMATION, BY THE POINCARÉ METHOD OF VARIATION OF INITIAL CONDITIONS, THE AUTHOR FINDS A SOLUTION CLOSE TO A REGULAR, UNPERTURBED SOLUTION CORRESPONDING TO MOTION OF THE "FLCAT" TYPE (G. N. DUBOSHIN, ASTRON. ZH., 36, 4, 1959). THE INITIAL CONDITIONS ARE SELECTED IN ACCORDANCE WITH CASSINI'S LAWS AND EXPANSIONS INTO SERIES OF THE COORDINATES OF ELLIPTICAL KEPLERIAN MOTION. THE FORMULAS DERIVED ARE THEN USED IN SAMPLE COMPUTATIONS AND A GOOD AGREEMENT WITH OBSERVATIONAL DATA IS DEMONSTRATED. FACILITY: V. I. LENIN POWER INSTITUTE.

UNCLASSIFIED

Acoustics

USSR

UDC 534.322.3+534.83

KOROBKOV, V. YE., OSIPOV, G. L.

"The Current State of the Problem of Combatting Transportation Noise in Cities"

Nauchn. tr. NII stroit. fiz. Gosstroy SSSR (Scientific Works of the Scientific Research Institute of Structural Physics of Gosstroy USSR), 1970, No 1(13), pp 65-80 (from RZh-Fizika, No 12(I), Dec '70, Abstract No 12Zh758)

Translation: The results of studies on methods of evaluating and measuring transportation noise and determining the laws of its propagation under building conditions are generalized and analyzed. Recommended values for the permissible noise of transportation flows and conclusions and proposals aimed toward lowering transportation noise in cities are given. 14 references. G. O.

1/1

PROCESSING DATE--02OCT70

UNCLASSIFIED

172 024

TITLE--HIGH STRENGTH ALUMINUM BASE CASTING ALLOY -U-

AUTHOR--(05)-STROGANOV, G.B., ALTMAN, M.B., POSTNIKOV, N.S., KHOLODOV,

YU.I., OSIPOV, I.N.  
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 260,893

REFERENCE--OTKRYTIYA, IZJBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--06JAN70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ALUMINUM ALLOY, METAL CASTING, METALLURGIC PATENT, HIGH  
STRENGTH ALLOY, DIE CASTING, NICKEL CONTAINING ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1990/1790

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0109751

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AA0109751

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO INCREASE THE PHYSICOMECH. PROPERTIES OF THE TITLE ALLOY DURING DIE CASTING, IT HAS THE FOLLOWING COMPN.: SI 6-8, CU 2.5-5.5, CD 0.05-0.4, MG 0.05-0.4, B 0.002-0.1, ZR 0.005-0.25, TI 0.1-0.3, FE SMALLER THAN OR EQUAL TO 0.5PERCENT, AND AL THE REMAINDER. TO INCREASE THE HIGH TEMP. STRENGTH OF THE ALLOY, IT ALSO CONTAINED SMALLER THAN 0.5PERCENT NI.

UNCLASSIFIED

USSR

UDC 669.715'3'782'73'721'781.018.28:669.018.2(088.8)

STROGANOV, G. B., AL'TMAN, M. B., POSTNIKOV, N. S., KHOLODOV, Yu. I., OSIPOV, I. N., LOKTIONOVA, L. I., and CHERKASOV, V. V.

"High-Strength Aluminum-Base Casting Alloy"

USSR Authors' Certificate No 260893, Cl. 40 b, 21/02, (C22c), filed 10 Apr 68, published 12 May 70 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 1766 P)

Translation: The alloy contains (in %) Si 6-8, Cu 2.5-5.5, Cd 0.05-0.4, Mg 0.05-0.4, B 0.002-0.1, Zr 0.005-0.25, Ti 0.1-0.3, Fe  $\leq$  0.5. The addition of up to 0.5% Ni is recommended in order to raise heat resistance. In the heat-treated state under regime T5 the alloy at room temperature (loam casting) has a breaking point of 36-40 kg/mm<sup>2</sup>,  $\sigma_{0.2}$  30-34 kg/mm<sup>2</sup>, and  $\sigma$  3-6% given  $\sigma_{100}^{300} = 5.5$  kg/mm<sup>2</sup>. The alloy possesses elevated fluidity and impermeability, is highly machinable, is weldable by argon arc welding, and contains no toxic elements. It is recommended for the manufacture of cast parts subject to great stresses.

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- 16 -

1/2 043 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--ELECTRON BEAM METHOD OF PRODUCING THIN FILMS FROM CHEMICAL  
COMPOUNDS -U-  
AUTHOR--(02)-VISHNYAKOV, B.A., OSIPOV, K.A.  
COUNTRY OF INFO--USSR  
SOURCE--ELECTRON BEAM METHOD OF PRODUCING THIN FILMS FROM CHEMICAL  
COMPOUNDS (ELEKTRONNOLUCHEVOY METHOD POLUCHENIYA TONKIKH PLENOK IZ  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, PHYSICS, MATERIALS  
TOPIC TAGS--CARBIDE, SEMICONDUCTOR MATERIAL, REACTION KINETICS, GLOW  
DISCHARGE, DIELECTRIC MATERIAL, ELECTRON BEAM, METAL FILM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3003/1751 STEP NO--UR/0000/70/000/000/0001/0143  
CIRC ACCESSION NO--AM0130595  
UNCLASSIFIED

2/2 043

UNCLASSIFIED

PROCESSING DATE--27NOV70

GIRC ACCESSION NO--AM0130595

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: CHAPTER I. ELECTRON BEAM METHOD OF IMMEDIATE BREAK DOWN OF CHEMICAL COMPOUNDS 5. II. PRODUCTION OF DIELECTRIC FILMS UNDER THE INFLUENCE OF ELECTRONS AND GLOW DISCHARGE 21. III. PRODUCTION OF METALLIC, SEMICONDUCTOR AND CARBIDE FILMS 89. IV. BREAKDOWN OF HARD INORGANIC COMPOUNDS BY ELECTRON BOMBARDMENT 125. LITERATURE 136. THE BOOK GIVES A DETAILED REVIEW OF DOMESTIC AND FOREIGN INVESTIGATIONS OF A COMPARATIVELY NEW METHOD OF PRODUCING THIN FILMS, IN WHICH BREAK DOWN OF INITIAL CHEMICAL COMPOUNDS OF VARIOUS SUBSTANCES IS ACCOMPLISHED IMMEDIATELY BY ELECTRON BEAM. THEORETICAL PRINCIPLES OF THE METHOD ARE PRESENTED; LINE DIAGRAMS ARE GIVEN OF THE APPARATUS NECESSARY FOR ACCOMPLISHING THE PROCESS OF BREAKDOWN OF COMPOUNDS AND PRECIPITATION OF FILMS; RESULTS OF EXPERIMENTAL WORK FOR THE PURPOSE OF PRODUCING BY THIS METHOD FILMS OF VARIOUS MATERIALS ARE DESCRIBED IN DETAIL. BASIC PARAMETERS ARE PRESENTED OF THE KINETICS OF THE PROCESS OF PRECIPITATION, ON WHICH DEPENDS THE RATE OF FILM GROWTH. THE PUBLICATION WAS WRITTEN FOR INVESTIGATORS, DESIGNERS, ENGINEERS AND TECHNICIANS, METAL PHYSICISTS AND OTHER SPECIALISTS OF VARIOUS BRANCHES OF INDUSTRY (INSTRUMENT MAKING, ELECTROVACUUM, CHEMICAL, ETC.), AND ALSO FOR TEACHERS AND STUDENTS OF CHEMICAL AND TECHNICAL UNIVERSITIES, STUDYING PROBLEMS OF PRODUCING THIN FILMS AND THEIR PRACTICAL APPLICATION.

UNCLASSIFIED

Thin Films

USSR

UDC:621.9-418:537.533.004.14

VISHNYAKOV, B. A., and OSIPOV, K. A.

"Cathode-Ray Method of Production of Thin Films of Chemical Compounds"

Elektronno-Luchevoy Metod Polucheniya Tonkikh Plenok Iz Khimicheskikh Soyedineniy [English Version Above], Moscow, Nauka Press, 1970, 144 pages

Translation: This book presents an objective review of domestic and foreign investigations of the comparatively new method of production of thin films in which the decomposition of the initial chemical compounds of various materials is achieved directly by a beam of electrons. The theoretical principles of the method are outlined and diagrams are presented of the devices necessary for the application of the process of decomposition of compounds and precipitation of films. The results of experimental work performed with the purpose of producing films of various materials by this method are described in detail. The principal parameters of the kinetics of the process of precipitation which determine the rate of film growth are presented.

This book is designed for researchers, designers, engineers and technicians, metal physicists, and other specialists in various branches of industry

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USSR

VISHNYAKOV, B. A., and OSIPOV, K. A., Elektronno-Luchevoy Metod Polucheniya Tonkikh Plenok iz Khimicheskikh Soyedineniy, 1970, 144 pages

(instrument building, electric-vacuum, chemical, etc.) as well as teachers and students in chemical and technical colleges studying problems of the production of thin films and their practical applications. Fourteen tables; thirty illustrations; 232 biblio.refs.

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USSR

VISHNYAKOV, B. A., and OSIPOV, K. A., Elektronno-Luchevoi Metod Polucheniya Tonkikh Plenok iz Khimicheskikh Soyedineniy, 1970, 144 pages

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USSR

VISHNYAKOV, B. A., and OSIPOV, K. A., Elektronno-Luchevoe Metod Polucheniya  
Tolkikh Plenok iz Khimicheskikh Soyedineniy, 1970, 144 pages

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USSR

VISHNYAKOV, B. A., and OSIPOV, K. A., Elektronno-Luchevoy Metod Polucheniya  
Tonkikh Plenok iz Khimicheskikh Soyedineniy, 1970, 144 pages

1. Influence of Various Factors on Decomposition Process. . . 125
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1/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--EFFECT OF ELECTRON IRRADIATION ON THE THERMAL DECOMPOSITION OF  
MOLYBDENUM HEXACARBONYL -U-  
AUTHOR--(02)-VISHNYAKOV, B.A., OSIPOV, K.A.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. KHIM. OBRAB. MATER. 1970, (1), 151-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--METAL CARBONYL, CARBIDE, MOLYBDENUM COMPOUND, THERMAL  
DECOMPOSITION, CHEMICAL DEPOSITION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0903 STEP NO--UR/0472/70/000/001/0151/0152  
CIRC ACCESSION NO--AP0118072  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118072

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPOSITION RATE OF MO SUB2 C FILMS ON GLASS SUBSTRATES BY THERMAL DECOMP. OF MO(CO) SUB6 AT 10 PRIME NEGATIVE3 TORR AND 170-350DEGREES IS INCREASED SEVERAL FOLD BY IRRADIATING THE SUBSTRATE WITH 600-EV ELECTRONS AT 3-5 MA-CM PRIME2.

UNCLASSIFIED

USSR

UDC 665.534

OSIPOV, L. N., KHAVKIN, V. A., AGAFONOV, A. V., ROGOV, S. P., RYSAKOV, M. V.,  
and PEREZHIGINA, . Ya., All Union Scientific Research Institute of the  
Petroleum Industry

"Hydrofining of Sulfur-Containing Secondary Gasolines to Obtain Stock for  
Catalytic Reforming"

Moscow, Khimiya i Tekhnologiya Topliv i Masel, No 2, 1971, pp 1-3

Abstract: The article describes results of experiments on the hydrofining of thermal-cracked and TCC gasolines, as well as mixtures of these gasolines with straight-run gasoline for the purpose of obtaining stock for catalytic reforming. The experiments were carried out on an apparatus with alumina-cobalt-molybdenum catalyst loading of 0.5 l, a total pressure of 35 at, a temperature of 350-425°C, space velocity 0.5-5.0 hr<sup>-1</sup>, gas circulation 300 l/l stock. The object of the experiments was to obtain a product containing not more than 0.003 percent sulfur by weight or 0.0002 percent nitrogen by weight, with an iodine number no greater than 1 g I<sub>2</sub>/100 g. The results indicate that these gasolines can be successfully improved on existing blocks or units for the preliminary hydrofining of straight-run gasoline L-24-300 following a slight  
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USSR

OSIPOV, L. N., et al, Khimiya i Tekhnologiya Topliv i Masel, No 2, 1971, pp  
1-3

modification of the design requiring merely a 50-100 percent increase in the  
loading volume of the alumina-cobalt-molybdenum catalyst.

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USSR

UDC: 621.372.832:621.372.826.1

DUBROVIN, V. F., MIROVITSKIY, D. I., and OSTPOV, I. S.

"Directive Dividers Using Metal-Dielectric Waveguides"

Moscow, Antenny, No. 9, 1970, pp 72-80

Abstract: The beneficial characteristics of H waveguides provided the inspiration for the authors' researches of broadband elements used in uhf techniques for such devices as two and multi-channel directive power dividers, directional couplers, hybrid and rotating connections, and the like. In the present article, the results of the development of a two-channel directive power divider using waveguides of metal and dielectrics are given. The fundamental H<sub>01</sub> wave in the guide is very simply excited by a rectangular waveguide with an H<sub>10</sub> wave. The considerations leading to the choice of the width for the waveguide's dielectric plate and its dielectric permeability are indicated, and the details of the branching method for the power division are discussed. Direct connection between the divided output paths of the instrument was eliminated by the introduction of an insulating partition made of an absorbing material of the M-1 type in the shape of a wedge, with a base of

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USSR

DUBROVIN, V. F., et al., Antenny, No 9, 1970, pp 72-80

8 mm, an altitude of 56 mm, and a thickness of 4 mm, which had the effect of sharply improving the divider's characteristics. A photograph and drawings of the instrument are given.

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USSR

UDC: 621.372.832

DUBROVIN, V. F., MIROVITSKIY, D. I., OSIPOV, L. S., Moscow Institute of  
Radio Engineering, Electronics and Automation

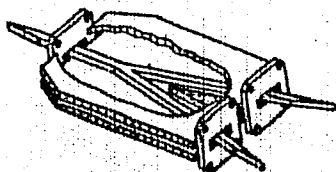
"A Power Divider"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,  
No 27, 1970, Soviet Patent No 279726, Class 21, filed 10 Mar 69, p 53

Abstract: This Author's Certificate introduces a power divider for super-high frequencies based on a metal-dielectric waveguide. As a distinguishing feature of the patent, the device is designed for directional division of SHF power over a wide frequency band while retaining high electrical insulation of the side branches without using additional unidirectional devices. The unit is made in the form of a one-piece metal-dielectric waveguide wye with an angle of 18-20° between the symmetric branches. The crossovers from the metal-dielectric to the standard waveguide in the symmetric branches are separated by an absorbing shield which may take the form of a wedge located on the bisector of this angle.

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DUBROVIN, V. F. et al., Soviet Patent No 279726



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" 131 "

USSR

UDC: 621.372.85

DUBROVIN, V. F., MIROVITSKIY, D. I., OSIPVO, L. S.

"Directional Dividers Based on Metal-Dielectric Waveguides"

V sb. Antenny (Antennas--collection of works), Vyp. 9, Moscow, "Svyaz", 1970, pp 72-80 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 128221)

Translation: The authors give the results of development of directed SWR power dividers based on metal-dielectric waveguides in which new principles are used for ensuring high directivity. This made it possible to create structurally simple dividers providing high electrical characteristics over a wide frequency band. Making the dividers under laboratory conditions does not require the use of any special technology, and they can be made by printed-circuit techniques in mass production. Basic electrical and structural characteristics are given for a two-channel directional power divider in the centimeter wavelength range. Methods are indicated for further improving the characteristics of dividers of this type. Six illustrations, one table, bibliography of nine titles. Resumé.

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Probability and Statistics

USSR

OSIPOV, L. V. (Leningrad)

"Probabilities of Large Deviations for Sums of Independent Random Variables"

Moscow, Teoriya Veroyatnostey i yeye Primeneniya; April-June 1972, pp 320-41

Abstract: Let  $X_1, \dots, X_n, \dots$  be a sequence of independent, identically distributed random variables with distribution function  $F(x)$ , and let  $EX_1 =$

0,  $DX_1 = 1$ , Put  $F_n(x) = P\left\{\sum_{i=1}^n X_i < x\right\}$ ,  $\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-z^2/2} dz$ .

Let  $\Lambda(z)$  be such a function that  $\Lambda(z)/\sqrt{z} \rightarrow \infty$ ,  $z \rightarrow \infty$ , and  $\Lambda(z) < z^2$ ,  $1/2 < \alpha < 1$ .

The author considers the following problem: under which conditions

$$1 - F_n(x) = \left(1 - \Phi\left(\frac{x}{\sqrt{n}}\right)\right) \exp\left\{\sum_{v=3}^k \mu_v \frac{x^v}{n^{v-1}}\right\} (1 + o(1)), \quad n \rightarrow \infty,$$

uniformly in  $x \in [0, \Lambda(n)]$ , where  $k$  is the largest integer for which

1/2

USSR

OSIPOV, L. V., Teoriya Veroyatnostey i yeye Primeneniya; April-June 1972,  
pp 320-41

$\lim_{n \rightarrow \infty} A^n (z) > 0$  and  $\mu_3, \dots, \mu_k$  are real numbers? Four theorems are presented.  
Theorem 4 gives an answer to this question under some additional restrictions  
on  $\Lambda(z)$ . In Theorem 2 the case  $\Lambda(z) = z^\alpha$  is considered.

USSR

UDC 576.851.49(Shigella).097.2.098

OSIPOVA, L. V.; KUL'BERG, A. Ya.; Institute of Petrochemical Synthesis, Academy of Sciences; Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR

"Production of Poly-D-Phenylalanine Conjugates With Bacterial Antigens"

Moscow, Voprosy Meditsinskoy Khimii, Vol 17, No 5, Sep/Oct 71, pp 472-475

Abstract: A protein-lipopolysaccharide complex of *Shigella flexneri* (O-antigen) was conjugated with poly-D-phenylalanine through N-carboxyanhydride of the amino acids. The water-insoluble precipitate was analyzed for the presence of O-antigen as judged from the reducing sugar content as well as from a decrease in the amount of O-antigen in supernatant fluid. The test demonstrated that water-insoluble conjugate of O-antigen with poly-D-phenylalanine specifically adsorbs *Shigella flexneri*

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USSR

OSIPOVA, L. V., et al, Voprosy Meditsinskoy Khimii, Vol 17,  
No 5, Sep / Oct 71, pp 472-475

antibodies. The data from this experiment agree with the author's earlier experiments (1969) analyzing the antigenic properties of water-insoluble protein conjugates (ox gamma globulin conjugated with poly-L-and-D-phenylalanine), which also demonstrated retention of the antigenic structure of a conjugated protein..

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USSR

UDC: 621.311.23:[621.362:538.4]

CHERNOBROVKIN, A. P., OSIPOV, M. I.

"Combination Power Plants With MHD Generators and Gas-Turbine Units"

Tr. Mosk. vyssh. tekhn. uch-shcha im. N. E. Baumana (Works of the Moscow Higher Technical Academy imeni N. E. Bauman), 1970, No 134, pp 146-155  
(from RZh-Elektrotehnika i Energetika, No 10, Oct 70, Abstract No 10A154)

Translation: The paper discusses systems of MHD installations which utilize the heat of exhaust gases from an MHD generator in a gas-turbine unit. The total degree of compression for a cycle is 130-150 bars with 3-4 intermediate cool and reheat cycles. The turbines are connected either before the MHD generator or in parallel. In either case the heat is transmitted to the gas-turbine unit by means of recuperative heat exchangers with heating to 1123-1223°K before the turbines. A recuperative heat exchanger is also used to preheat the air before the MHD generator to 1500°K. The efficiency of a cycle reaches 50-53 percent. There is almost no necessity for cooling water. It is assumed that the cost of an installed kW should be lower than with a combination MHD-steam power plant. However, 1123°K 150 bar and 1500°K 5 bar heat exchangers may turn out to be too expensive. The problem of starting MHD installations with gas-turbine units is simpler than in the case of MHD power plants with a steam cycle. Five illustrations, bibliography of seven titles. P. P. Ivanov.

1/1

Power, Turbine, Engine, Pump

USSR

UDC: 621.438:538.4

CHEPNOBROVSKIN, A. P. OSIPOV, M. I.

"Combined Power Installations With MHD-Generators and Gas-Turbine Units"

Tr. Mosk. vyssh. tekhn. uch-shch. im. N. E. Baumana (Works of the Moscow Higher Technical Academy imeni N. E. Bauman), 1970, No 134, pp 146-155 (from RZh-Turbostroyeniye, No 8, Aug 70, Abstract No 8.49.92)

Translation: One of the ways of using high temperatures is to build combined installations with a magnetohydrodynamic generator and a gas-turbine unit with the working medium under high pressure. Such installations are capable of fairly high efficiency (50-53%) and excellent maneuverability with low capital expenditures on the gas turbine section as compared with a combined installation with MHD generator and steam-turbine unit. In order to make the proposed combined installations with MHD generator and gas-turbine unit, it is necessary to achieve high pressures (130-150 abs. at.) in the compressors, and to make heat exchangers which operate at high temperatures under considerable pressure differentials (about 100 abs. at.). The appropriate design of the gas-turbine section of the combined installation should be selected with regard to the overall technical and economic indices, which requires a valid estimate of the cost of the basic equipment for a magnetohydrodynamic generator for such an installation.

1/1

USSR

UDC 669.018.8

BANNYKH, O. A., GRIGOR'YEV, A. I., and OSIPOV, M. M., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov  
 "Influence of Alloying With Aluminum on Oxidation Resistance of Kh20N40 Alloy"  
 Moscow, Zashchita Metallov, Vol 7, No 2, Mar-Apr, 1971, pp 161-164.

Abstract: The authors studied long-term oxidation of Kh20N40 alloy containing aluminum under thermal cycling conditions with heating to 900 and 1,000°. Chemical compositions of the alloys studied were:

Alloy No.	Al	Ni	Cr	C	Mn	Si	Fe
1	0.04	39.65	20.37	0.100	0.37	0.52	Remainder
2	0.85	40.24	19.80	0.095	0.40	0.23	"
3	2.04	40.65	19.48	0.048	0.35	0.14	"
4	4.62	40.67	19.50	0.040	0.58	0.18	"

Aluminum increases the rate of oxidation of this steel at 900°, but has a favorable influence on oxidation resistance at 1,000°.

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USSR

UDC 624.012.4.04:725.36

OSTROV, M. M., Nal'chik

"Application of Similitude Theory and Dimensions for Designing Silo Walls"

Moscow, Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 6, Jun 71, pp 61-62

Abstract On the basis of similitude theory and the theory of dimensions a method is given for determining the stress state in the walls of reinforced concrete grain silos. Using some determinant theory along with Young's modulus and Poisson's coefficient the authors develop the mathematics where they finally arrived at 10 linear algebraic equations with nine unknowns. Solving these equations with the proper substitutions of values, the authors come up with the following formula for stress in silo walls:

$$\sigma_{1,N} = \gamma l_N \Phi$$

where  $\sigma$  is stress,  $\gamma$  is force of gravity,  $l$  is length in meters and  $\Phi$  is the resolving function. 2 figures, 2 bibliographical references.

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USSR

UDC 669.018.8

BANNYKH, O. A., GRIGOR'YEV, A. I., and OSIPOV, M. M., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov  
 "Influence of Alloying With Aluminum on Oxidation Resistance of Kh20N40 Alloy"

Moscow, Zashchita Metalloy, Vol 7, No 2, Mar-Apr, 1971, pp 161-164.

Abstract: The authors studied long-term oxidation of Kh20N40 alloy containing aluminum under thermal cycling conditions with heating to 900 and 1,000°. Chemical compositions of the alloys studied were:

Alloy No.	Al	Ni	Cr	C	Mn	Si	Fe
1	0.04	39.65	20.37	0.100	0.37	0.52	Remainder
2	0.85	40.24	19.80	0.095	0.40	0.23	"
3	2.04	40.65	19.48	0.048	0.35	0.14	"
4	4.62	40.67	19.50	0.040	0.38	0.18	"

Aluminum increases the rate of oxidation of this steel at 900°, but has a favorable influence on oxidation resistance at 1,000°.

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UDC 620.193.5

OSIPOV, M. M., GRIGOR'YEV, A. I., and BANIKYKH, O. A., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov

"Effect of Chromium and Nickel on Heat Resistance of Fe-Cr-Ni Alloys in Air"

Moscow, Zashchita Metallov, Vol 7, No 1, Jan-Feb 71, pp 24-27

Abstract: The authors studied the effect of the chromium and nickel content on the heat resistance of Fe-Cr-Ni alloys and the oxide film structure for purposes of determining the optimal component ratio in austenitic steels for prolonged operation at temperatures up to 1000°. The alloys contained 16-24 wt. percent Cr and 30-45 wt. percent Ni. The specimens were oxidized in air at 850, 900, and 1000°. The tests for each temperature lasted 25, 50, and 100 hours, with a total oxidation time of 1000 hours for each specimen. The results indicate that the presence of ferric and nickel oxides in the scale structure is unfavorable. The greatest oxidation resistance is found where the scale

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OSIPOV, M. M., et al., Zashchita Metallov, Vol 7, No 1, Jan-Feb 71,  
pp 24-27

forming on the alloys consists of the spinel  $\text{Ni}(\text{Fe},\text{Cr})_2\text{O}_4$  and the oxide

$\text{Cr}_2\text{O}_3$ . In order to obtain an oxide film structure favorable from the standpoint of prolonged heat resistance at  $1000^\circ$ , alloys containing 20 percent chromium should have at least 40 percent nickel, while alloys with 24 percent chromium should have 30 percent nickel.

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1/2 033 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--EFFECTIVE ELECTRON COLLISION FREQUENCY IN AURORAL IONOSPHERE -U-  
AUTHOR--(02)-USIPOV, N.K., PIVOVAROVA, N.B.  
COUNTRY OF INFO--USSR  
SOURCE--HDSCOW, GEOMAGNETIZM I AERONOMIYA, VOL X, NO 3, 1970, PP 551-552  
DATE PUBLISHED-----70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES  
TOPIC TAGS--AURORA, IONOSPHERE, ELECTRON COLLISION, ELECTRON TEMPERATURE,  
ELECTRON CONCENTRATION, ELECTROMAGNETIC WAVE SCATTERING  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/1926 STEP NO--UR/0203/70/010/003/0551/0552  
CIRC ACCESSION NO--AP0133775  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133775

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE THE ALTITUDES OF THE ELECTRON CONCENTRATION MAXIMA OF SPORADIC FORMATIONS CHANGE FROM CASE TO CASE IN THE RANGE FROM 110 TO 140 KM, THE RESULTS OF OBSERVATIONS OF SPORADIC FORMATIONS OVER A QUITE LONG PERIOD MAKE IT POSSIBLE TO DETERMINE THE ALTITUDINAL VARIATION OF THE EFFECTIVE COLLISION FREQUENCY FOR THE E REGION IN THE AURORAL IONOSPHERE. FIG. 1 SHOWS THE MEAN VALUES OF THE EFFECTIVE COLLISION FREQUENCIES FOR TIKSI FOR SEPTEMBER NOVEMBER 1967. THESE ARE COMPARED WITH DATA FOR THE MIDDLE LATITUDE IONOSPHERE. THERE IS A GENERAL TENDENCY IN THE AURORAL IONOSPHERE FOR A DISPLACEMENT IN THE DIRECTION OF HIGH V SUBEFF VALUES IN COMPARISON WITH THE MIDDLE LATITUDES. IT IS MOST NATURAL TO RELATE THIS CIRCUMSTANCE TO THE PRESENCE OF ELECTRON HEATING, BEING A RESULT OF INJECTION OF FLUXES OF CHARGED PARTICLES. THERE IS SOME POSSIBILITY OF INCREASING THE EFFECTIVE COLLISION FREQUENCY DUE TO THE SCATTERING OF AN ELECTROMAGNETIC WAVE ON ELECTRON CONCENTRATION INHOMOGENEITIES, WHOSE PRESENCE IS SO CHARACTERISTIC FOR THE AURORAL IONOSPHERE. HOWEVER, AS INDICATED BY THE MICROSTRUCTURE OF THE AURORAL IONOSPHERE, THE SPORADIC IONIZATION ACCOMPANYING QUIESCENT AURORAL FORMS IS CHARACTERIZED BY THE PRESENCE OF SMALL SCALE INHOMOGENEITIES WHOSE EFFECT CANNOT BE VERY SIGNIFICANT. ALL THE DATA INDICATE THAT ELECTRON HEATING EXERTS AN EFFECT ON THE DETERMINED COLLISION FREQUENCIES. FACILITY: RADIOELECTRONICS INSTITUTE. FACILITY: INSTITUTE OF SPACE PHYSICS RESEARCH AND AERONOMIYA, YAKUTSK AFFILIATE SIBERIAN DEPARTMENT ACADEMY OF SCIENCES.

UNCLASSIFIED

1/3 027 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--STRUCTURE AND PARAMETERS OF SPORADIC FORMATIONS IN THE AURORA.  
IONOSPHERE -U-  
AUTHOR--(03)-USIPOV, N.K., PIVVAROVA, N.B., CHIRYAYEV, A.G.  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, GEOMAGNETIZM I AERONOMIYA, VOL X, NO 3, 1970, PP 553-554  
DATE PUBLISHED--70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES  
TOPIC TAGS--IONOSPHERE, AURORA, E LAYER, ELECTRON DENSITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/0534 STEP NO--UR/0203/70/010/003/0553/0554  
CIRC ACCESSION NO--AP0132724  
UNCLASSIFIED

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PROCESSING DATE--20NOV70

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CIRC ACCESSION NO--AP0132724

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS DESCRIBE THE RESULTS OF SPECIAL IONOSPHERIC MEASUREMENTS MADE DURING THE NIGHTTIME IN WINTER (1965-1967) AT TIKSI STATION. THE OBJECT OF STUDY WAS SPORADIC FORMATIONS ASSOCIATED WITH QUIESCENT AURORAL FORMS (E SUBS OF TYPES A AND K). THE ELECTRON CONCENTRATION LAYER IS CHARACTERIZED BY THREE PARAMETERS:  $N_{SUBMAX}$  IS THE MAXIMUM ELECTRON CONCENTRATION,  $Z_{SUBMAX}$  IS THE ALTITUDE OF THE MAXIMUM ELECTRON CONCENTRATION,  $A$  IS THE HALF THICKNESS OF THE LAYER. FREQUENTLY THERE IS A TRANSITION OF SPORADIC FORMATIONS OF ONE TYPE TO ANOTHER. SUCH TRANSITIONS, CAUSED BY A CHANGE IN THE CORRESPONDING PARAMETERS OF ELECTRON FLUXES, ARE ACCOMPANIED BY A CHANGE IN THE ALTITUDE OF THE MAXIMUM ELECTRON CONCENTRATION. IN MOST CASES AN INCREASE IN THE ALTITUDE OF THE ELECTRON CONCENTRATION MAXIMUM IS RELATED TO AN INCREASE IN HALF THICKNESS OF THE LAYER. THESE CHANGES ARE QUITE SLOW AND EVIDENTLY REFLECT CHANGES IN THE ELECTRON ENERGY AND PITCH ANGLE DISTRIBUTIONS. THE PULSED REGISTRY OF VERTICAL SOUNDING SIGNALS ALSO MAKES IT POSSIBLE TO OBTAIN SOME INFORMATION ON THE MICROSTRUCTURE OF SPORADIC FORMATIONS IN THE AURORAL ZONE. THE MOST IMPORTANT CHARACTERISTICS OF MICROSTRUCTURE OF THE IONOSPHERE AS A TRANSLUCENT TURBID MEDIUM IS THE DEGREE OF TURBIDITY  $BETA_{PRIME2}$  EQUALS  $E_{SUB0} \text{ PRIME2} - SIGMA \text{ SUBS } S \text{ PRIME2}$ , WHERE  $E_{SUB0}$  IS THE AMPLITUDE OF THE MIRROR REFLECTED SIGNAL COMPONENT,  $E_{SUBS}$  IS THE AMPLITUDE OF THE CORRESPONDING COMPONENT OF THE SPECTRUM OF SCATTERED WAVES, AND ALSO THE DISTRIBUTION FUNCTION OF THE REFLECTED SIGNAL AMPLITUDES.

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PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132724

ABSTRACT/EXTRACT--THE BETA PARAMETER IS DETERMINED FROM EXPERIMENTAL DATA OBTAINED FROM 65 SERIES OF PULSED REGISTRY OF THE AMPLITUDE OF REFLECTED SIGNALS FOR TYPES A AND R. IT WAS FOUND THAT IN 90PERCENT OF THE CASES BETA GREATER THAN 1; FOR SPORADIC FORMATIONS OF TYPE A BETA IS APPROXIMATELY EQUAL TO 2, WHEREAS FOR SPORADIC FORMATIONS OF TYPE R THERE IS A PREDOMINANCE OF BETA GREATER THAN 2. THE RESULTS INDICATE AN INTERRELATIONSHIP BETWEEN THE MACROPARAMETERS OF SPORADIC FORMATIONS OF THE E REGION IN THE AURORAL IONOSPHERE AND THEIR FINE STRUCTURE. FOR EXAMPLE, WITH A DECREASE IN ALTITUDE OF THE ELECTRON CONCENTRATION MAXIMUM THE INTERNAL STRUCTURE OF SPORADIC FORMATIONS BECOMES MORE COMPLEX.

FACILITY: RADIOELECTRONICS INSTITUTE, LENINGRAD DIVISION, INSTITUTE OF TERRESTRIAL MAGNETISM, IONOSPHERE AND RADIO WAVE PROPAGATION.  
FACILITY: INSTITUTE OF SPACE PHYSICS RESEARCH AND AERONAUTICS, YAKUTSK AFFILIATE ACADEMY OF SCIENCES USSR, SIBERIAN DEPARTMENT.

UNCLASSIFIED

USSR

UDC 547.279

TKALENKO, V. G., AMARSKAYA, A. P., KOLODYAZHENIYY, Yu. V., SADEKOV, I. D.,  
MINKIN, V. I., and OSIPOV, O. A., Rostov-on-the-Don State University

"Synthesis and Physical Chemical Properties of Aromatic and Heterocyclic  
Derivatives of Tellurium. V. Investigation of the Complex Formation of  
TeCl<sub>4</sub> With Schiff's Bases"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1943-1947

Abstract: Novel complex compounds of TeCl<sub>4</sub> with benzalanilines and β-  
hydroxynaphtalanilines have been synthesized. On the basis of IR spectro-  
scopic study of these complexes the conclusion was reached as to the lo-  
calization of the coordination bond in azomethine molecules. It has been  
shown that the equimolecular complexes are energetically more feasible  
and their structures have been discussed. The heats of complex formation  
reactions are correlated with the substituent constants in the aldehyde  
(σ<sup>+</sup>) and aniline (σ<sup>0</sup>) nuclei of the azomethine molecules.

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USSR

UDC 541.651.661.718.1

SHVETS, A. A., OSIPOV, O. A., AMARSHY, E. G., and MOISEYEVA, O. A., Rostov-on-the-Don State University

"Study of the Oxides of Aromatic Phosphines and Their Complexes by Infrared Spectroscopy"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 4, 1972, pp 829-833

Abstract: The relationship between the electro-orientation parameters  $\sigma_f$  and the phosphoryl vibration energy and that between the P=O and extraction capacity for substituted triphenylphosphine oxides and their complexes with  $ZnCl_2$  and  $SnCl_4$  were studied using the IR spectra of the various species. The complexes have a general form of  $ZnCl_2 \cdot 2(XC_6H_4)_3PO$ . The frequency of the P=O (in  $cm^{-1}$ ) increases in the order p-( $CH_3$ )<sub>2</sub>N, p- $CH_3$ O, p- $CH_3$ , H, p-Br, m-Br, and m- $NO_2$  for the free ligand. The order remains the same for the complexes but is shifted to a lower value for the  $ZnCl_2$  complexes and to a still lower wave number for  $SnCl_4$  complexes. In both the triphenylphosphine oxides and their complexes there was evidence of a direct polar bond between the substituents and the phosphoryl group. This increased in going from the free ligand to the complex. The electronic effect generated by the phosphorus atom is about three times less than by the carbon atom in the caronyl group of acetophenone.

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UDC 547.785.5+541.49+288.4

KOGAN, V. A., OSIPOV, O. A., CHUB, N. K., CARNOVSKIY, A. D., BURLOV, A. S.,  
TSUPAK, Ye. B., and POLUNIN, A. A., Kostov-na-Donu State University

"Complex Compounds of Copper With Heterocyclic Aldoximes"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 581-584

Abstract: A series of new polynuclear compounds of copper with heterocyclic aldoximes synthesized from benzimidazole were produced for the first time. Ultimate analysis and magnetochemical measurements are used to determine the composition of the compounds and the presence of an exchange interaction with perchlorate anions. Differences in the composition and properties of the complexes are determined as they are related to the nature of the anion. The IR spectra of the compounds are studied and a hypothesis is proposed for the point of coordination of the ligand with copper.

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Luminescence

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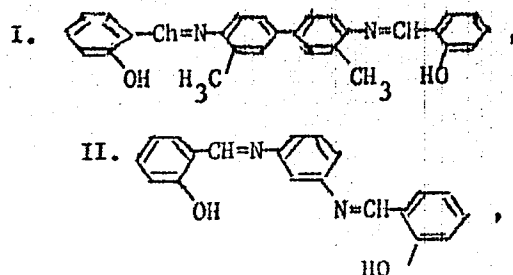
UDC 535.37+541.14

KIYAZHANSKIY, M. I., ASMAYEV, O. T., OSIPOV, O. A., KRASOVITSKIY, B. M.

"Luminescence and Photochemistry of Azomethyne Compounds. VII. Multinuclear Mono and Bis-azomethynes in the Crystal State"

Moscow, Zhurnal Fizicheskoy Khimii, Vol XLVI, No 1, 1972, pp 178-180

Abstract: In order to discover the effect of the length of the chain of conjugate bonds on the thermophotochromy of azomethynes, a study was made of some multinuclear mono and bis-azomethynes in the crystal state studied in detail in solutions previously [B. M. Krasovitskiy, et al., Zh. fiz. khimii, 45, 1467, 1971; O. T. Asmayev, et al., Zh. fiz. khimii, in printing]. The following compounds were selected for more detailed study:



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